UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,044	02/02/2006	Aik Seng Yak	NL030967	2392

47654 7590 08/06/2008

BAINWOOD HUANG & ASSOCIATES LLC
2 CONNECTOR ROAD
WESTBOROUGH, MA 01581

EXAMINER	
KAYRISH, MATTHEW	
ART UNIT	PAPER NUMBER
2627	
MAIL DATE	DELIVERY MODE
08/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,044	YAK ET AL.	
	Examiner	Art Unit	
	MATTHEW G. KAYRISH	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 February 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

"A Method for Determining the Lens Shift and Focal Offset in an Optical System by Tracking Error"

3. The disclosure is objected to because of the following informalities:

Page 1, line 5 starts "DVD discs..." which should be changed to "DVDs..." because the acronym for DVD is Digital Versatile Disk, The sentence is understood as stating "Digital Versatile Disk discs" which does not make sense.

Page 5, line 7 starts "design and functioning..." which should be changed to "design and function..." because this make more grammatical sense.

Page 6, line 29 states "...a focal offset error of 0.25 μm..." which should be changed to stated "...a focal offset error of 0.25 mm..." because this corresponds to the figures correctly.

Appropriate correction is required.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description:

Page 6, line 34 states "For instance, a data signal S_D..." however, S_D is not displayed in the figures.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference characters not mentioned in the description:

Figure 1A displays labels '6' and '7' which are not mentioned in the specification;

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing

date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claims objected to because of the following informalities:

Claim 1, lines 4-5 state "...for generating **an** detector output signal" which should be amended to state "...for generating **a** detector output signal".

Claim 12 is objected to because the phrase "...perpendicular to the optical axis of the light bema" misspells the word beam.

Claims 15-20 are apparatus claims that are dependent on method claim 12. Claims 15-20 are not in proper dependency format and thus should be amended to start "The method of claim 12/15/16/19, further comprising an optical disc drive apparatus..."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 4-9 and 12-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Morimoto (US Patent Number 6266301).

Regarding claim 1, Morimoto discloses:

Method for determining lens shift in an optical system of an optical disc drive apparatus (abstract), the optical system comprising:

Beam generator means for directing a light beam towards an optical disc (figure 1, items 2-2 and 23; column 4, lines 5-10);

An optical detector (figure 3, item 31) for receiving a reflected light beam (column 4, lines 55-58) and for generating a detector output signal (columns 4 & 5, lines 61-67 & 1-14);

The method comprising steps of:

Determining a relationship between lens shift and at least one signal component derivable from the detector output signal (column 5, lines 7-9 & 19-22);

Processing the actual detector output signal to calculate said at least one signal component (column 5, lines 12-13 & 19-22);

Calculating actual lens shift from said at least one signal component on the basis of said relationship (column 5, lines 19-26).

Regarding claims 4 and 7, Morimoto discloses the features of base claims 1 and 5, as stated in the 102 rejection above, and further discloses:

Wherein information regarding said relationship is read from a memory (columns 4 & 7, lines 17-22 & 8-14; inherent from this passage that the eccentricity signal contains information about the proper position of the lens).

Regarding claims 5, 6 and 8, Morimoto discloses the features of claims 5, 6 and 8 that are in common with those previously disclosed in claim 1, as stated in the 102 rejection above, and Morimoto further discloses:

Method for determining focal offset error in an optical system of an optical disc drive (abstract; "...controlling the track actuator...so that the laser beam passing through the objective lens is located at the center of the objective lens."), the method comprising steps of:

Detecting a signal representative of the actual lens shift (column 5, lines 7-13, 19-29; the lens shift is represented by a combination of all for detector outputs 'A' thru 'D')

Calculating the actual focal offset error from said lens shift representing signal on the basis of a predetermined relationship between focal offset error and lens shift (column 5, lines 19-26).

Regarding claim 9, Morimoto discloses the features of claim 9 that are in common with those previously disclosed in claims 1 and 5, as stated in the 102 rejections above, and Morimoto further discloses:

An objective lens (figure 1, item 20) arranged for focusing the light beam in a focal spot on an information layer of the disc (figure 1, light beam is focused on the

disc), the objective lens being displaceable in a direction perpendicular to the optical axis of the light beam (figure 16; column 1, lines 27-32).

Regarding claim 12, Morimoto discloses the features of claim 12 that are in common with those previously disclosed in claims 1, 5 and 9, as stated in the 102 rejections above, and Morimoto further discloses:

Generating a reference signal representing a desired amount of focal error (inherently zero);

Generating a focal error signal representing the actual focal error (column 5, lines 34-39);

Generating a focal offset error signal representing the actual focal offset error (column 7, line 17-18, "a focus error off set value" from the eccentricity compensating control (memory));

Adding the focal offset error signal to said reference signal and subtracting said focal error signal to obtain a result signal (column 7, lines 15-19);

Generating a focal actuator control signal on the basis of said result signal (column 7, lines 20-22).

Regarding claims 13 and 14, Morimoto discloses the features of base claim 12, as stated in the 102 rejections above, and further discloses the features of base claims 5 and 9, as stated in the 102 rejections above, therefore, claims 13 and 14 are met on the same basis.

Regarding claim 15, Morimoto discloses the features of base claim 12, as stated in the 102 rejection above, and further discloses the features of claim 15 that are in

common with those previously disclosed in claim 9, as stated in the 102 rejections above, and Morimoto further discloses:

The objective lens further being displaceable in a direction parallel to the optical axis of the light beam (column 1, lines 28-29; figure 16, item 93);

A focal actuator (figure 16, item 93) for setting the axial position of the objective lens (column 1, lines 28-29);

A control circuit (figure 10, item 5) for generating a control signal for controlling the focal actuator (column 7, lines 50-58).

Regarding claim 16, Morimoto discloses the features base claim 15, as stated in the 102 rejection above, and further discloses:

An input for receiving the detector output signal (figure 4, item 31 receives the reflected beam for the input);

A first processing block (figure 4 is the circuitry within figure 16, item 98) for processing the detector output signal to calculate a focal error signal (figure 4, signal OSM);

A second processing block (figures 10 & 16, items 5 & 99) for calculating the focal offset signal (figure 10, output of items 86 & 87);

Means for adding the focal offset signal to and subtracting the focal error signal from a reference signal (inherently zero) and generating a result signal (columns 7 & 8, lines 49-67 & 1-25);

Means for generating an actuator control signal on the basis of said result signal (figure 10, outputs "to track power AMP" and "Linear motor power AMP").

Regarding claim 17, Morimoto discloses the features of base claim 16, as stated in the 102 rejection above, and further discloses the features of claim 17 that are in common with or inherent from those previously disclosed in claims 4 and 7, as stated in the 102 rejection above, therefore, claim 17 is met on the same basis.

Regarding claim 18, Morimoto discloses the features of base claim 16, as state din the 102 rejection above, and further discloses:

Wherein the second processing block is designed for processing the detector output signal (figure 10, OSM is input which is derived from the detector output signal) to derive at least one measuring signal (figure 10, outputs "to track power AMP" and "Linear motor power AMP") from the detector output signal (figure 10, derived from OSM), and to calculate the focal offset signal (figure 10, input to items 86 & 87) from said at least one measuring signal on the basis of the information stored in said memory (figure 10, OSM offset, eccentric memory are stored in memory).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 2, 3, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto, in view of Kuribayashi (US Patent Number 6317396).

Regarding claims 2, 3, 10 and 11, Morimoto discloses the features of base claim 1, as stated in the 102 rejection above, and further discloses:

Wherein the optical detector is designed to generate detector output signals representing the detected amount of light in four quadrants (column 5, lines 7-13), and wherein said at least on signal component is defined according to: Px=(A+B)-(C+D) (column 5, lines 41-46), Py=(B+C)-(A+D) (column 5, lines 47-52).

Morimoto fails to specifically disclose:

Wherein Px and Py are divided by the total power of the four quadrants $\frac{1}{A+B+C+D}$;

Wherein Px and Py are low-pass filtered.

Kuribayashi discloses:

Method for determining tracking error in an optical system of an optical disc drive apparatus (abstract), the optical system comprising:

Beam generator means for directing a light beam towards an optical disc (column 2, lines 48-52);

An optical detector (figure 1, item 11) for receiving a reflected light beam (column 4, lines 55-58) and for generating a detector output signal (column 1, lines 40-45);

The method comprising steps of:

Determining a relationship between tracking error and at least one signal component derivable from the detector output signal (column 1, lines 47-54);

Processing the actual detector output signal to calculate said at least one signal component (column 1, lines 47-54; figure 1);

Calculating actual tracking error from said at least one signal component on the basis of said relationship (column 1, lines 47-54);

Wherein the optical detector is designed to generate detector output signals representing the detected amount of light in four quadrants (column 1, lines 41-45), and wherein said at least on signal component is defined according to: Px=(A+D)-(B+C) (column 1, lines 47-54);

Wherein (A+D)-(B+C) is low-pass filtered (column 1, line 50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to low-pass filter the signal components Px and Py of Morimoto, as taught by Kuribayashi, because this will smooth the output signal for generating the an accurate representation of the tracking error, or lens shift, as stated in column 1, lines 49-53.

Kuribayashi fails to specifically disclose:

Wherein Px and Py are divided by the total power of the four quadrants $\frac{1}{A+B+C+D}$.

However, this is merely a scaling factor to convert the tracking error signal and the lens shift signal into a percentage of the total power received by the four quadrants. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to divide the tracking error signals and lens shift signals by the total power, because this is performing a simple operation on the signal outputs to calculate the lens shift in a percentage of the total power, which will provide predictable results.

11. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto.

Regarding claim 19, Morimoto discloses the features of base claim 16, as stated in the 102 rejection above, and further discloses:

Wherein the second circuit further comprises a memory containing information on the relationship between the focal offset signal and the lens shift (columns 4 & 7, lines 17-22 & 8-14; inherent from this passage that the eccentricity signal contains information bout the proper position of the lens);

Wherein the control circuit receives an input signal containing information representing the actual focus error (figure 10, the control circuit receives OSM);

Wherein the first processing block is designed for processing said signal to calculate the actual lens shift (figures 4 is the circuitry of item 98 in figure 98 which also outputs OSM) and the second processing block is designed to calculate the focal offset signal from said actual lens shift on the basis of the information stored in memory (figure 10, output to items 86 & 87 are calculated as described in columns 7 & 8, lines 50-67 & 1-25).

Morimoto fails to specifically disclose:

Wherein the second processing block is designed for processing said signal to calculate the actual lens shift.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place process the signal to calculate in the second

processing block, because this is a simple rearrangement of circuit components to yield the same predictable results.

Regarding claim 20, Morimoto discloses the features of claim 20 that are in common with those previously disclosed in claims 17 & 18, as stated in the 102 rejections above, therefore, claim 20 is met on the same basis.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW G. KAYRISH whose telephone number is (571)272-4220. The examiner can normally be reached on 8am - 5pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew G. Kayrish
/M. G. K./
Examiner, Art Unit 2627
7/31/2008

/Brian E. Miller/
Primary Examiner, Art Unit 2627